(448)

UNCTAD/ITP/TEC/30

UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

TRANSFER AND UTILIZATION OF TECHNOLOGY IN LEAST DEVELOPED AND ISLAND DEVELOPING COUNTRIES

A country study on Fiji

UNITED NATIONS

Distr.
GENERAL

UNCTAD/ITP/TEC/30
25 November 1991

ENGLISH AND
FRENCH ONLY

TRANSFER AND UTILIZATION OF TECHNOLOGY

A country study on Fiji

Prepared by Hamzah Kassim,

**Consultant within the framework of
UNDP/UNCTAD Project RAS/86/168:
Transfer and utilization of technology in least developed
and island developing countries**

UNITED NATIONS
New York, 1992

CONTENTS

INTRODUCTION *1-11*

CHAPTER I - THE ECONOMY OF FIJI *12-33*

A Geography *12-14*

B Economic trends *15-33*

CHAPTER II - HUMAN RESOURCE POTENTIAL AND TECHNOLOGICAL CAPABILITIES *34-47*

A Fiji Institute of Technology *37-40*

B Fiji National Training Council *41-42*

C Promoting human resource development *43-47*

CHAPTER III - POLICIES AND ARRANGEMENTS FOR ACQUISITION AND UTILIZATION OF TECHNOLOGY *48-86*

A External sector *48-57*

1 Trade trends *48-54*

2 Main channels for technology acquisition *55-57*

B Utilization of technology *58-64*

C Strategy for developing technological capability *65-66*

D Technical infrastructure *67-75*

1 R and D in the field of agriculture *67-68*

2 The Institute of Natural Resources (INR) *69-70*

3 Centre for Appropriate Technology and Development (CATD) *71*

4 Pine Commission's R and D programme *72-73*

5 Standards and quality *74-75*

E The need for co-ordination and collaboration on technology transfer, research and development and technical support, in particular to SMEs *76-86*

1 Co-ordinating aspects *76-78*

2 Technical support to SMEs *79-86*

CHAPTER IV - CASE STUDIES *87-102*

A Garment manufacturing *88-99*

B Pine timber processing *100-102*

CHAPTER V - SUGGESTIONS AND RECOMMENDATIONS *103-119*

ANNEX

1 Quality and productivity improvement scheme

2 Product development and design scheme

REFERENCES

LIST OF TABLES

1 Balance of payments 1986-1990

2 Summary of balance of payments 1985-1990

3 Payments for services

4 Log supply

5 Production/Sales

ABBREVIATIONS

AsDB	Asian Development Bank
CATD	Centre for Appropriate Technology and Development
EEC	European Economic Community
EIB	European Investment Bank
FDB	Fiji Development Bank
FIT	Fiji Institute of Technology
FNTC	Fiji National Training Council
FTIB	Fiji Trade and Investment Board
IBRD	International Bank for Reconstruction and Development
INR	Institute of Natural Resources
R and D	Research and development
TFF	Tax Free Factory
TFZ	Tax Free Zone
UNDP	United Nations Development Programme
USP	University of South Pacific
CAD	computer-aided design
CAM	computer-aided manufacturing

INTRODUCTION

1. Future growth of the developing countries will depend on industrialization. Technology is a crucial component of this process, enabling greater productivity and the sharpening of industrial competitiveness. Active promotion of technological activities will help to lay a foundation for leap-frogging towards an advanced industrial stage through increased domestic technological capabilities.

2. There is a need also to formulate explicit short-, medium- and long-term technology strategies based on current and future technological needs to meet current and future market requirements. These strategies should, however, be flexible and responsive to unforeseen changes in technology, the economic climate and market needs; therefore, they must be subject to guidance and regular, continuous evaluation of their worth and relevance. It must be emphasized that technology planning attempts to tackle in a comprehensive fashion the building-up of technology infrastructure in terms of human resources and institutions, the optimal use of technological capabilities and the increase in efficiency of the technological activities. This requires that priorities be specified in accordance with the chosen style of development and national needs and the programme defined and carried out to attain them.

3. Studies in the field of technology policy and research show that countries without well-defined economic strategies have only vague technology policy. While such countries generally encourage the development of infrastructure they are incapable of guiding the development of technology capability in industry.

4. For many developing countries, such as Fiji, the policy instruments and institutional mechanisms to foster technology development remain inadequate. Little attention is given to the generation of a minimum level of domestic technology necessary to absorb technology from foreign sources and adapt them to gain comparative advantage in the market. Market forces alone may not be sufficient to promote technological development and sustain growth. This has been recognized in Japan and South Korea, for example, where the Governments have contrived to shape and promote technological development.

5. It should be emphasized that, in Fiji, there is also an important role for the private sector, which has not yet (with notable exceptions) developed a tradition of industrial technology development. Ways are being sought to allow the private sector to participate constructively in technology development commensurate with national priorities and interests. In this respect, a policy reflecting the broad technological development objectives and strategies of the nation would be a means of guiding the private sector within the overall national scheme for technology development.

6. The Government should, therefore, be prepared to adopt a strategic long-term approach to technology policy. This would be based on an assessment of current and future technological, economic and social needs and problems, with awareness of contemporary technological trends and associated commercial opportunities. Building up the technology infrastructure in human resources and policy instruments it would have to be tackled in a comprehensive fashion. The policy would need to represent positive consensus between Government, industry and society.

7. The technology policy and plan would, therefore, provide a focus for the contributions of the various actors involved in the process of technology development. It would also offer a framework for co-operation among them on achieving the desired technological objectives. For example, agencies involved in education, manpower development and re-training can formulate and examine their programmes in the light of the skilled manpower profile specified by a plan. Skill formation is, of course, a central feature in any technological programming plan. Companies need trained people; they must also take into account the need for trained personnel who would shoulder responsibilities for importation, adaptation and improvement of foreign

technologies, including the introduction of new methods of making old things as well as making new things.

8. The importance of incentives cannot be over-emphasized in the context of indirect ways of carrying out technological planning. Given the central importance of the issue, it is useful to treat incentives as a component of the technological plan. Incentives could include taxation measures, grants, subsidies and information exchange, among other elements.

9. However, a technology policy framework, like any other scheme, will remain an academic exercise unless through suitable policies and institutions implementation has been built in. The instruments of such a policy could provide the desirable economic environment which will guide private enterprises and others concerned with technology development to make decisions which conform to the general policy orientations and plan priorities.

10. It was in this context that the assessment of policies and arrangements in respect of the transfer and utilization of technology in Fiji was undertaken by the United Nations Conference on Trade and Development (UNCTAD) within the framework of UNDP-funded project RAS/86/168 - Transfer and Utilization of Technology in Least developed and Island developing countries. The implementation was carried out by the UNCTAD Advisory Service on Transfer of Technology, within the Technology Programme. This report is a result of that assessment. It provides in the first chapter an economic review of Fiji. The second chapter deals with the human resources potential and technological capabilities. The third chapter examines the policies and arrangements for acquisition and utilization of technology. Chapter IV analyses technology transfer in two key sectors. The last chapter summarizes suggestions and recommendations emanating from the assessment.

11. The Ministry of Trade and Commerce was the host agency for facilitating the study mission. The UNCTAD secretariat extends its thanks to the Ministry of Trade and Commerce for the excellent co-operation and assistance provided to the consultant during the study mission. Various key officers in the Ministry also worked closely with the consultant during the three-week mission, particularly the Deputy Secretary of Trade and Commerce, Mr. Luke Rokovada, who had shown keen interest in the project.

SURVEY OF THE QUALITY AND USEFULNESS OF UNCTAD PUBLICATIONS AND OF THEIR END-USERS

The UNCTAD secretariat, in the context of its programme evaluation activities and in response to intergovernmental requests, is seeking the opinions of end-users in order to have basic data for assessing the quality, usefulness and effectiveness of *inter alia* its research reports and publications. As the success of such an exercise is critically dependent on an adequate rate of response we should appreciate it if you would take time to answer the questions below and submit any other comments that you may have concerning the current document.

1. **Title or symbol number of document** . . . . . .

2. **When did you receive the document?** . . . . . .

3. **How did you receive the document?** *(tick one or more boxes)*

Through Permanent Mission to United Nations	( )	From UN bookshop	( )
From ministry or government office	( )	From university libraries	( )
Directly from UNCTAD secretariat	( )	Own request	( )
By participating in an UN/UNCTAD intergovernmental meeting	( )	UNCTAD initiative	( )
		Other (please specify)	. . . . .
By participating in an UN/UNCTAD sponsored training course or seminar	( )	. . . . .	

4. **For what main purposes do you use the document?** *(tick one or more boxes)*

Policy formulation	( )	Education and training	( )
Analysis and research	( )	Management	( )
Legislation	( )	Other (please specify)	. . . . .
Background information	( )	. . . . .	

5. **How do you rate the document as regards:**

Its usefulness to your work *(tick one box)*

Extremely useful ( ); Very useful ( ); Useful ( ); Marginally useful ( ); Not at all ( ).

Its quality, in terms of the following aspects *(tick one box in each case)*:

	Outstanding	*Excellent*	*Good*	*Adequate*	*Poor*
Presentation and readability	( )	( )	( )	( )	( )
Originality of ideas	( )	( )	( )	( )	( )
Wealth of information	( )	( )	( )	( )	( )
Up-to-date information	( )	( )	( )	( )	( )
Technical accuracy	( )	( )	( )	( )	( )
Quality of analysis, including objectivity	( )	( )	( )	( )	( )
Validity of conclusions	( )	( )	( )	( )	( )
Clarity of recommendations	( )	( )	( )	( )	( )
Comprehensiveness of coverage	( )	( )	( )	( )	( )

6. **Other observations** *(if any)* . . . . . .

. . . . . .

. . . . . .

. . . . . .

Finally, we would appreciate it if you could provide the following information about yourself:

Name . . . . . Occupation/Functional title . . . . . .

Address . . . . . .

Your answers are for internal use and will be kept confidential. Thank you for your co-operation.

Please forward the questionnaire to : PROGRAMME CO-ORDINATION AND EVALUATION UNIT
EXECUTIVE DIRECTION AND MANAGEMENT
UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT
PALAIS DES NATIONS – CH-1211 GENEVA 10

CHAPTER I

THE ECONOMY OF FIJI

A. Geography

12. Fiji became independent in 1970 as a Dominion within the Commonwealth of Nations. A constitution based on the 'Westminster' model was adopted. The constitutional status of the country changed in 1987 when it was declared a Republic with a President as Head of State. At present an interim Government charged with restoring economic stability and returning the country to a parliamentary system is running the country. Considerable success has been achieved in restoring the economy, with a strong recovery phase now in evidence. A new constitution has been approved. This should lead to a return to parliamentary government in due course.

13. Fiji is made up of 300 islands spread over 1.3 million square kilometres ocean. Only one-third of these islands is permanently inhabited. Most economic activities are concentrated on the two main islands, Viti Levu (10,429 square kilometres) and Vanua Levu (5,556 square kilometres) which together account for 87 per cent of the entire land area of 18,300 square kilometres. This is where 90 per cent of the total population live.

14. Of Fiji's total land area only 13 per cent is arable land, mainly used the growing of sugar cane, rice, cocoa, ginger and other crops. Well over 80 per cent of the land area is covered in forest, tree crops and pasture. While the forestry industry is beginning to create a great impact on the economy, investment in mineral prospecting, especially gold, has also been on the rise. Possibilities of copper and oil production are being explored. Growth in tourism has been mainly due to favourable climatic conditions combined with the availability of ideal hotel locations and improved airline seat capacity.

B. Economic trends

15. The economy of Fiji is based primarily on sugar production and tourism. However, both industries performed poorly in the early 1980s. Sugar prices were low and production suffered badly from drought and cyclones. Tourism was adversely affected by the world recession. A revival of the economy in the mid-1980s was interrupted by the political events of 1987. However, 1988 and 1989 were years of recovery, helped by a strong revival in sugar prices and a rapid recovery in tourism. GDP grew by about 12 per cent in real terms in 1989 and 4.8 percent in 1990 and growth of about 4.5 per cent was expected for 1991.

16. Some progress occurred in the diversification of the economy away from sugar and tourism. Forestry is currently in transition from plantation management to pulpchips and sawn timber exporting; it is expected to become an industry of major significance in the next 10 years. Gold production has expanded dramatically and is now the second largest export commodity. Non-sugar agriculture, including ginger, cocoa and root crops, is expanding, but it still remains small in absolute terms. There has been some diversification through import substitution, for example in meat, rice and dairy products, although costs have been relatively high. The manufacturing industry is expanding, most notably the production of garments for export. Production and exports from the fisheries sector have also shown substantial growth over the last four years. Additional investments are planned in the expansion of the vessel fleet and canning capacity.

17. During the 1970s and early 1980s development of the manufacturing sector concentrated on the processing of the output of the agricultural and fisheries sectors and import substitution.

The traditional processing industries are sugar milling, coconut milling, fish canning and sawmilling. Import substitutes have increased in range and include flour, biscuits, beer, soft drinks, cigarettes, cement, soap and paint. The contribution of the manufacturing sector to GDP averaged around 12 per cent between 1980 and 1987, of which sugar production accounted for roughly one third. Employment in manufacturing averaged around 14,000 during the same period. By the mid 1980s it was evident that growth in the sector had stagnated. The small size of the domestic market constrained opportunities for further growth through import substitution. There was greater awareness of the cost to the economy of protecting some of these industries.

18. The manufacturing sector has been undergoing a major restructuring. This has focused on deregulation and export-orientation; there is already evidence of a strong resurgence of growth underway in the sector. Employment in the sector is estimated to stand at almost 21,000 people or 23 per cent of total paid employment in 1990. Manufacturing is now the key area of employment growth in the economy, accounting for more than half of the new jobs created in 1989.

19. A major impetus for growth in the manufacturing sector has been the establishment of the Tax Free Factory (TFF)/Tax Free Zone (TFZ) scheme. The response to the two-year-old scheme has been overwhelming. Domestic and foreign investments, notably in the garment industry, have been stimulated. Most of the new employment recently created in the sector is attributable to this scheme. By September 1990, 253 projects were approved and 104 implemented.

20. The incentive package for firms granted tax-free factory status includes duty-free entry of capital equipment and raw materials, exemption from tax on corporate profits for 13 years, no withholding tax on dividends and easy repatriation of capital and profits.

21. Australia is the largest source of development aid for Fiji. New Zealand has traditionally been the second major source; since 1985, Japan has also emerged as a major donor. The EEC, United Kingdom and UNDP are also important sources of development assistance. Substantial assistance has recently been received from France. The major sources of overseas loan finance are the AsDB, IBRD and EIB.

22. A large proportion of new investment in manufacturing is aimed at exploiting preferential access to Australian and New Zealand markets under the SPARTECA arrangements. This has been particularly evident in the garment industry. Fiji's preferential access to Australian and New Zealand markets is likely to erode over time, given the trade liberalization policies that these countries are pursuing. This underlines Fiji's need to encourage diversified investments in manufacturing, both in terms of products and markets.

23. Major changes in policy emerged in reaction to the poor economic performance of the early 1980s. These policies were firmly adopted by the interim Government which took office in December 1987. Previous policies of regulation in pursuit of import replacement have been abandoned in favour for a strategy for promoting economic growth through expansion of exports. A programme of economic deregulation is being pursued to bring domestic prices into line with international prices. Import licence requirements on a wide range of manufactured goods were removed in 1989 and similar changes for agricultural products are envisaged. The Government of Fiji in 1989 took measures to phase out import licence control over a period of two to three years in order to provide greater consumer choice and competitiveness in the local industry. This, it is hoped, would promote greater efficiency in the local industry. The local deregulation measures of the industries have now led to the removal of most of the 48 items from import licence control, with the exception of 15 agricultural-based products which are still so controlled and where a licence from the Ministry of Trade and Commerce needs to be procured before such goods may be imported.

24. Tariff duties on basic consumer items are low. These include such items as flour, onions, potatoes, rice, tinned goods, etc. Tariff duties are also low on items considered to be conducive to the economic development of the country. These include agricultural farm tractors, machinery and raw materials which are needed for the manufacturing of finished articles. In recent years the Government has made it possible for manufacturers to import raw materials duty-free. These includes machinery if they are being imported to establish for a new factory. Factories servicing the local market can import machinery for expansion purposes at a low tariff duty of 7.5 per cent.

25. However, duty rates on many other items were fairly high until 1990s. This policy had been pursued with a view to protecting local industries. For example, the import duties levied on imported confectioneries, cereals and building materials were fairly high, ranging from 57.5 per cent to 87.5 per cent.

26. The Government has recently taken steps to peg duties on such items at a more realistic level of around 30 per cent to 50 per cent. The Customs Department, in consultation with the Ministry of Trade and Commerce and the Ministry of Finance, has now taken the initiative of effecting this change, which will be implemented gradually over the next three years. With the phasing out of import licences, tariffs will replace non-tariff barriers as the main means of regulating trade. In the medium term, substantial reductions in tariff rates will be made. By 1995, duty rates for protective purposes will be decreased gradually to a target level of 15 per cent. Duty on raw materials, machinery and equipment for industry will be reduced to 7.5 per cent in the short term, with a view to the eventual elimination of duties on these items. These measures will assist in bringing domestic prices more in line with world prices.

27. The move by the Fijian Government to liberalize the manufacturing sector will increase pressure on industry to become more competitive and to improve its efficiency. Being a small country, it is felt that the manufacturing sector has been over-protected and has not exploited all export possibilities. The Government hopes to increase the export orientation of Fijian companies, apart from those which are already located in the Free Trade Zone area. One of the objectives is to upgrade the pressure on Fijian companies to improve their technology and quality to satisfy the demands of overseas markets. This also helps to create greater competition through the inflow of foreign products.

28. However, there are mixed feelings in the industry with regard to the move by the Government to open the Fijian economy. Most of the industries which were established under the import substitution regime now have to bring their corporate strategies more in line with the new manufacturing environment. The shift will be very difficult for companies which have concentrated on Fiji and have not explored the export market. Foreign firms may have more advantages.There is a firm belief that local companies are not capable of facing the competition from the inflow of foreign products. There is some element of uncertainty among local industries as to the consequences of deregulation. At the moment, a few of the companies are holding their investment plan in abeyance, awaiting further details on the Government's action on deregulation. It would be a good idea if greater details were given to companies with regard to future Government Industrial Policy so as to enable them to make their investment decision quickly.

29. For other companies, particularly emerging firms, deregulation means greater opportunities to explore the foreign market. Some of these firms are very supportive of the Government's move to liberalize the manufacturing sector. They feel that the small domestic market in Fiji does not justify an infant industry protection policy. Fijian firms must be able to see beyond the domestic market. Protection policies in the past, however, have discouraged firms from incorporating export strategies in their corporate plans. Competition, they feel, is healthy because it would enhance the capability of local firms.

30. Because of the changing global environment, it would be in the interest of the economy of Fiji to formulate strategies that would increase some degree of discipline among the industries where quality, technology and design will become the cornerstone of its manufacturing strategy. Hence, the Government's move to examine its industrial policy with a view to deregulating the economic structure, is timely. This review should be carried out in close collaboration with industries. In fact, it would be useful to institute regular dialogues between industry associations and the Government.

31. From the viewpoint of the Government, deregulation is inevitable owing to the changing world trade pattern. Small island economies such as Fiji have to open up and explore the global market. Industry must be prepared to meet the new changing environment. Although the formulation of new Government policy is a difficult process because it demands new orientation from industry and creates some element of uncertainty such a move is essential to preserve economic progress in Fiji.

32. Since the Government does not want to intervene in the market place and encourages market forces to determine the success of companies in Fiji, there is a need to create an ap-

propriate climate and infrastructure that would enhance the competitiveness of Fijian industries. The Government wants Fijian firms to explore new markets. For example, in the past, most export garments went to Australia and New Zealand. Now it appears that firms in Fiji are beginning to look at the United States market where price is a major determinant. Several firms have indicated that the United States market is very difficult to penetrate because it is so price-sensitive. This orientation imposes different demands on firms for which they will have to upgrade their standards to meet the new requirements.

33. It is important for companies in Fiji to be able to explore new markets with a different environment and requirements and to continue to upgrade themselves to meet the changing demands. In this context, technology assumes an important dimension.

CHAPTER II

HUMAN RESOURCE POTENTIAL AND TECHNOLOGICAL CAPABILITIES

34. Rapid expansion of the manufacturing sector has posed two immediate challenges to the Government with respect to the provision of industrial estates and skilled manpower. These challenges are being addressed through the development of export processing zones and through a programme for industrial skills development.

35. Current efforts in human resource development should focus on economic activity. The object is to ensure adequate supplies of skilled manpower to meet labour demand in various sectors of the economy. Likewise, it will be necessary to strengthen linkages between education/training and the labour market through manpower planning, and to improve the functioning of the labour market.

36. Special attention has been directed at the recent losses of middle- and high-level manpower. One solution involves the expansion of the Fiji Institute of Technology, which will require major capital works on building, equipment and staff development. Existing training facilities make it impossible to raise student intakes, as staffing levels have also been severely affected by emigration. There is general agreement by officials and industry that an appropriate programme should build on the two major training institutions in Fiji: the Fiji Institute of Technology and the Fiji National Training Council.

A. Fiji Institute of Technology (FIT)

37. The FIT is responsible for a range of technical, trade and business studies training at certificate and diploma level including both pre-employment and apprenticeship-type training. Even before 1987, Fiji's requirements for technological instruction were only just being met. Training equipment was becoming out-dated and the FIT was unable to adjust its curriculum to meet the emerging requirements of industry. As Fiji diversifies its economy, the responsibilities have increased, yet staff losses through emigration continue. Financial resources have been curtailed at a time when the demand for skilled workers is expanding rapidly. Enrolment has been falling. A revitalization and expansion of FIT must be an important component of any programme intended to ease Fiji's skilled labour shortage.

38. The FIT is responsible for conducting training under the Apprenticeship Training System, controlled and supervised by the Fiji National Training Council. The Institute accepts students who are not apprentices. It also offers programmes outside the official (and traditional) apprenticeship scheme. The Institute consists of nine schools. Programmes are taught in facilities located at five locations, only one of which is outside Suva. In Suva, on the main campus (Samabula) programmes are taught in six schools. The Nasese campus houses the School of Hotel and Catering Services; the Laucala Bay campus houses the School of Maritime Studies and the Vatuwawqa campus houses the School of Printing. The Western Division Technical Centre at Ba offers a number of lower level programmes.

39. The aims of the Institute can broadly be summarized as follows:

- to offer the required range of courses at technician, diploma, and trade-certificate levels to meet middle level manpower requirements in Fiji for the technical and business management areas and occupations;
- to assess the changing needs of the private and public sectors and design courses to meet these manpower training and economic development needs;
- to facilitate adult education and training through day release, extension and part-time courses.
- to assist industry and commerce by research and consultancy services and to mount spe-

cialized courses in response to new and changing technologies;
- to maintain active links with other educational institutions (particularly the Fiji National Training Council) and
- to be actively engaged in curriculum development, staff training and educational technology as a continuous process.

40. The Fiji Institute of Technology should develop close links with business with a view to obtaining advice on training requirements, gaining industrial experience for existing teachers, and being assisted in the replacement of equipment. Furthermore, these links will help the FIT to evolve curricula which is needed by industries.

B. Fiji National Training Council (FNTC)

41. FNTC, in addition to running specific training courses to which firms can send employees, currently subsidizes training by employers under a grant scheme. There are two major types of grant schemes operated.

- Method 'A' provides grants and training for larger employers who have an in-house training unit employing full-time trainers. Training programmes must be approved by the Council; according to current guidelines, the firms must provide for a comprehensive staff development programme covering all employees in the organization. Direct grants under Method 'A' totalled F$1,544,967 or 47 per cent of all expenditure by FNTC and was paid to 34 employers over one year.
- Method 'B' subsidizes the costs of recognized training programmes undertaken by employees at formal training institutions (including FNTC) in approved courses, but grants may not cover in-firm training costs. The scheme is designed to help small employers or businesses that do not have a capacity to establish full systematic training programmes for all personnel. These firms, representing the majority of business enterprises, must rely on the existing training system in Fiji to offer appropriate training courses in order to participate usefully in the scheme. Direct grants under Method 'B' totalled F$135,982, i.e. only 4 per cent of total expenditure, to be distributed among a potential 3,000 employers one year.

42. FNTC has also been responsible for the management of the apprentice training programmes under the National Apprentice Scheme. Apprentices undertake on-the-job training in industry that is complemented by trade-related training at FIT. Upon the completion of the agreed term of apprenticeship, the Craft or Completion Certificate is issued, provided that the apprentice has successfully completed the institutional training at FIT and fulfilled the other terms of the apprenticeship.

C. Promoting human resource development

43. Fiji's emigration increased dramatically after the events of 1987. According to a recent study on manpower development, data on the number of students graduating from FIT and apprenticeship-training programmes indicate a similar downward trend. The number of apprentices (for all trades) completing their programmes fell from 200 in 1985 to 80 in 1988 - a drop of 60 per cent. The number of apprentices completing training in Government agencies fell from 58 in 1985 to 19 in 1988, a drop of 67 per cent. Those being trained by the private sector fell from 142 in 1985 to 61 in 1988, a drop of 57 per cent. Between 1985 and 1987 the number of registered apprentices also fell markedly, but a reversal of the trend was noted in 1988. This shift has resulted from private-sector training activity. The number of apprentices being trained by the Government has fallen since 1985, while those being trained by the private sector have increased - from 83 in 1985 to 176 in 1988 - a rise of 112 per cent.

44. Mention should be made that education and training have received considerable attention in Fiji since independence. Fiji has virtually achieved universal access to primary education

and the vast majority of school-age children receive a reasonable level of secondary education. The Government's specific objective is to provide 10 years of basic education for all children.

45. It is recognized that the education system must aim for the highest standard of excellence so that graduates are of the highest quality to support the needs of Fiji. However, there is a need to strengthen the breadth, depth and technology orientation of the skills base. This implies that the labour force is likely to face difficulties in absorbing and adjusting to new technologies in manufacturing, particularly in view of the inflow of foreign investment and the Tax Free Zone. Of no less importance is the need to create a technology culture among local industries. It should be forward-looking, supportive and conducive to the development of leadership in technology development. For example, organizations like the Fiji Marine Shipyard, exploit such new technologies as CAD and CAM to carry out their tasks. The shipyard has already seen the benefit of applying computers. Already a 38-metre Catamaran has been built using all computer cut parts, including the shell-plating. The 73 metre cruising vessel under construction is the second one to be built relying entirely on computer cut plates. The main benefits of using new computer technologies for shipbuilding are acceleration of construction and greater accuracy.

46. Apart from this sub-sectoral advance in using up-to-date technologies, given the lead times involved in developing human resources, it is essential that a sense of urgency prevail in manpower development programmes for all sectors of the economy. Hence, it is important that the Government pay sufficient attention to upgrading the existing infrastructure so as to provide adequate skilled manpower to meet future industrial needs. A particular area of concern is the lack of involvement of industry in the elaboration of manpower planning. Inputs from the private sector into the planning and developing of curricula in training institutions should be encouraged. The Garment Training School is a good example of the willingness of industry to participate in training and re-training programmes. Such a programme should be expanded when it has proved its worth. It should, perhaps even be replicated in other sectors such as furniture, machinery and engineering. These two sectors are critical because of the priority accorded to developing wood-based industries and also owing to the scarcity of metal-based industries to support strong industrial development.

47. An interview with one of the companies involved in the metal-based industry has revealed the lack of supporting industries, particularly in mould and die. This places the metal industry at a severe disadvantage if it is to play a more important role in supporting industrial development in Fiji. Unless remedial measures are instituted, the prognosis for efficient technological development in the metal-working industry is unfavourable. It is noted that the Skills Development Fund offers an excellent way to promote training in industry. However, there is a need to review continuously its effectiveness, particularly its support to small-scale industries. There is an urgent need also for an entrepreneurial development programme to promote participation of indigenous Fijians in business and industry. The FNTC will have to be supported through special allocations to promote entrepreneurship programmes in close collaboration with regional organizations such as Technonet Asia. Again with regard to the Skills Development Fund, it is imperative that the Fund be used to fulfil clearly industries' requirements; for this reason, it is proposed that the private sector participate actively in the management of funds. Existing facilities or new training centres should be partially supported by the Fund, particularly by the provision of initial launching grants. It is good to note that the Fund is now made available for short-term consultancy programmes and FNTC should also establish a consultancy data base to enable companies to select consultants in the relevant areas. Human resource development must assume an important role in the development of Fiji if the country wishes to compete in the export markets and exploit the importation of technology brought about by the rapid growth of foreign firms in the Tax Free Zone.

CHAPTER III

POLICIES AND ARRANGEMENTS FOR ACQUISITION AND UTILIZATION OF TECHNOLOGY

A. External sector

1. Trade trends

48. About 80 per cent of total receipts in 1991, came from earnings from sugar, unrefined gold, fish, timber, garments, molasses and coconut oil. Export at F$640 million was F$110 million lower than in 1990.

49. Imports, consisting mainly of machinery and transport equipment, mineral fuels and manufactured goods, amounted to F$860 million in 1991. This was F$90 million lower than in 1990. The trade deficit is steadly increasing, however, owing to higher imports (see table 1).

50. The net inflow on account of services in 1991 was F$240 million compared with F$220 million in 1989 and F$235 million in 1990. This increase was mainly as a result of higher net receipts from tourism and transportation and to lower net outflows for other private services. The inflow from tourism reached in 1990 F$338 million compared with F$295 million in 1989. Net outflows on account of private transfers increased in 1991 to F$43 million from F$34 million in 1990 and F$22 million in 1989 reflecting higher emigrant transfers in 1991.

51. The capital account recorded a lower surplus of F$13 million in 1991 compared to F$92 million in 1990. This was owing to the early repayment of some expensive loans and also the deferred drawdown of some committed loans as well as to a decline in direct investment.

Table 1

Balance of payments
(F$ million)

	1988	1989	1990	1991(p)
CURRENT ACCOUNT				
Export f.o.b.	508.9	598.3	752.0	638.1
Import f.o.b.	564.0	736.1	944.3	856.2
Trade balance	-55.1	-137.8	-192.3	-218.6
Services credits	374.3	548.9	621.9	631.8
Services debits	250.7	328.8	386.2	394.8
Services (net)	123.6	220.1	235.7	237.0
Goods and services (net)	68.5	82.3	43.4	18.9
Investment income credits	33.8	42.1	49.7	57.1
Investment debits	88.1	112.3	125.3	129.8
Investment (net)	-54.3	-70.2	-75.6	-72.7
Goods, Services and Income (net)	14.2	12.1	-32.2	-53.8
Private Transfers (net)	-5.1	-21.5	-33.7	-42.8
Government Transfers (net)	48.1	42.1	37.0	46.2
Current Account Balance	57.2	32.7	-28.9	-50.4
CAPITAL ACCOUNT, EXCLUDING RESERVES				
Direct investment	64.6	70.6	139.3	67.6
Government debts	13.9	-16.5	-4.6	-43.0
Statutory authorities debts	4.3	-35.6	-50.3	-26.5
Banks	4.4	-9.5	5.0	0.0
Others	21.0	-11.2	2.8	15.0
Total capital, excluding reserves	99.6	-2.2	92.2	13.1
Errors and omissions	-1.9	-48.0	-7.8	0.0
Overall Balance	154.9	-17.5	55.5	-37.3

(p): Estimate

Source: Bureau of Statistics, Fiji.

52. The overall balance in 1991 (including net errors and omissions) showed a deficit of F$37 million compared with a surplus of F$55 million in 1990, and with a deficit of F$18 million in 1989. This was reflected in 1989 in the decline in the net official reserves of the Reserve Bank of F$14.5 million of which F$12.0 million was owing to exchange rate valuation gains, and a fall of F$3.3 million in Government-held foreign assets. (Table 2) The deficit of 1991 was due to a decline in exports and a lower level of capital inflows.

Table 2

SUMMARY OF BALANCE OF PAYMENTS 1985-1990
(F$ Million)

	1985	1986	1987	1988	1989	1990
(a) Trade balance	-201.8	-136.7	-14.5	-55.1	-137.8	-192.3
(b) Goods, services and income (net)	-41.6	-18.6	4.0	14.2	12.1	-32.2
(c) Transfers (net)	27.1	10.7	-10.8	43.1	20.6	3.3
(d) Current account balance	-14.5	7.9	-6.8	57.2	32.7	-28.9
(e) Capital account balance	34.9	24.8	-62.6	99.6	-2.2	92.2
(f) Overall balance	-7.1	37.1	-49.1	154.9	-17.5	55.5

Source: Bureau of Statistics, Fiji.

53. During the second half of 1980s Australia became the main source of exports with an average of F$60 million (27 per cent); ahead of the United Kingdom with, F$55 million (24 per cent), and New Zealand with, F$47 million (21 per cent). The other sources are: United States F$18 million (8 per cent); Japan, F$14 million (6 per cent); and Canada, F$7 million (3 per cent).

54. Australia was also the major importer with F$177 million of imports (34 per cent), followed by New Zealand, F$86 million (16 per cent); Japan, F$61.5 million (12 per cent); and Taiwan and China, both F$39 million (8 per cent). The other major importers are: Singapore, F$28 million (6 per cent); United States F$26 million (5 per cent); UK, F$20 million (4 per cent); Hong Kong, F$16 million (3 per cent); Republic of Korea, F$14 million (3 per cent); and France, F$3 million.

2. *Main channels for technology acquisition*

55. Like many developing countries, Fiji aims to encourage the inflow of foreign technology, capital and management to develop its manufacturing sector. Technology has been acquired by companies in Fiji in a number of ways. In the initial phase of building up its manufacturing base, several joint venture companies were set up, particularly through Australian companies. During the initial phase of developing the manufacturing industry, the inflow of foreign direct investment came via wholly owned subsidiaries of foreign firms and joint venture operations. This method of technology acquisition is one of the most important channels of building the manufacturing base in Fiji.

56. Besides joint venture arrangements, some local companies have also acquired technology through the purchase of machinery, including assistance for specific consultancy services. Industries related to plastic, food and wood-based products have generally been developed through direct purchases of machinery and consultancy services. Many of these enterprises started with the owners being involved in trade activities which later expanded into manufacturing activities. In view of their experience in the business and their connections with technology suppliers, they are able to get the necessary equipment, raw materials and other

consultancy services to start their businesses directly from suppliers. In certain cases, consultancy services were provided by research and technical institutions in Australia and New Zealand.

57. The third method of technology acquisition by companies in Fiji is through turn-key projects whereby a complete industrial process or plant is supplied by machine manufacturers together with various types of study and design supervision and training services. Foreign experts were employed initially then were gradually phased out as local staff became more skilled. The establishment of Tropik Wood is a good example (see paragraph 100).

B. Utilization of technology

58. Companies in Fiji which are owned by local entrepreneurs, particularly those which acquired technology from direct purchase of machinery and consultancy services, have rapidly acquired technological capability. Learning and information effects have been accelerated as a result of intensive in-house efforts. Specific expertise obtained from Australian and New Zealand consultants has helped in developing a strong base of technology within the firms. Many of these firms have attempted, on their own, to acquire the necessary information and know-how. They have developed very strong technical exchange networks and engaged in informal links with independent machine manufacturers, overseas research organizations and raw materials suppliers. They subscribe to various trade journals and magazines and attend international exhibitions regularly. The promotion of information links has helped these companies to keep abreast of technological changes and the competitive environment. However, many of these firms have faced difficulties in evaluating some of the proposals from consultants and technology suppliers, particularly those firms which had diversified into new products. For example, a shoe company was approached by a consultant to market its product under an international brand name. However, this involved certain fees and royalty payments. It was found that the firm needed assistance to evaluate the conditions and cost involved in using an international brand name. Almost all these firms use relatively mature technologies, particularly those in the food, wood and plastic industries. Hence, they are able to source technology from independent machine suppliers.

59. The introduction of the Tax Free Zone in 1988 led to a second wave in foreign investment in Fiji. This brought about a new surge in foreign direct investment through wholly owned companies, particularly off-shore operations in textiles. Local involvement in planning and implementation of these manufacturing operations had been minimal, if not totally non-existent. The spin-off from investment is in terms of employment opportunities created in Fiji.

60. Currently there is very little component manufacturing. However, Fiji has been trying to encourage the development of components. Fiji, to a great extent, has shown a generous attitude towards foreign investment and is striving to attract the inflow of foreign technology, pursuing an open transfer of technology policy with minimum intervention from the Government.

61. Since foreign investment is an important channel for industrial development, the Government must ensure the development of industrial infrastructrue and human resources. The Ministry of Trade and Commerce is keenly interested in strengthening technology development and in overcoming the lack of technical expertise.

62. Two major areas have been identified as crucial to development of a technical capability. The first is the supply of adequate skilled manpower with the appropriate work ethic. Various foreign companies have stressed the importance of increasing the skill and productivity of local workers. Some companies have begun introducing incentive payments, so as to motivate workers to higher levels of productivity. Various foreign firms are now participating in training programmes. The development of the Garment Training Centre is a joint effort between the Government and private industries. Several members of the Governing Board of the Training Centre come from industry. The Government's role is seen as ensuring that the various training institutions strengthen their capability to supply adequate manpower.

63. The second major factor is the demand for information by local industries. Lack of information is a major barrier to firms seeking to enhance their technological capability. Information is crucial in selecting the right technology suppliers. Various spokesmen for industry have stressed the importance of setting up an information base through which entrepreneurs can avail themselves of a full range of processes and product technology of particular interest to their firms. When an entrepreneur engages in a new line of manufacturing activity there may be few resources available by which to carry out an extensive search. Public agencies such as the Fiji Trade and Investment Board (FTIB) can assist in scanning the technology market and identifying alternative suppliers of technology. Such as information system could also assist other entrepreneurs in supplying information on the tariffs and technical regulations of other countries. In line with the country's export-oriented drive, it is essential that a dynamic information system be established to assist local manufacturers in obtaining the right information with regard to markets, technical regulations, products, processes and technology suppliers.

64. Given the current trend to deregulate the economy and minimize Government intervention in the economic system, the development of an appropriate information system would create an environment conducive to more active involvement by companies in making a correct choice. It should be stressed that neither companies nor Government favours any form of intervention in the technology transfer process. According to FTIB, royalty payments on technology transfer agreements have never been in excess of 4 per cent of sales. Because of the small number of technical agreements, the Government has not been greatly concerned about this matter. As table 3 shows, commissions, royalties, patents, brokerage and copyright charges amounted to only F$2.246 million (1989). The Government's role has been to provide the infrastructural support for companies to make the right choice of technology and market strategies.

Table 3

	Payments for services (million dollars)			
	1986	1987	1988	1989
1. Commissions, royalties, patents, brokerage and copy-right charges :	1.429	1.654	2.394	2.246
2. Fees : Examination, passport, visa etc. :	0.724	1.694	3.362	2.765
3. Professional service charges paid by individuals, companies for work done on their behalf or for administrators, management and know-how :	14.336	12.269	12.816	18.820
4. Professional service charges as per 3 but paid by Government and statutory bodies:	5.823	3.611	4.165	12.136

Source: Bureau of Statistics, Fiji.

C. Strategy for developing technological capability

65. In the brief survey undertaken in Fiji, it can be seen that technology acquisition capability is fairly well-developed among domestic firms engaged in import substitution industries. However, as Fiji moves into new areas and diversifies into new products, acquisition of technology becomes more critical. With the growing emphasis on encouraging indigenous Fijians into industry, it is important that support programmes be initiated in the field of technology acquisition. As pointed out by the Fijian Development Bank, there is a need to strengthen companies' capabilities in selecting technology. In this connection, it should be added that the Fiji Development Bank is the agency set up by the Government to provide loans for industrial and agricultural centres. The Bank assists both public and private sectors mainly by extending medium or long-term loans. It also provides other forms of assistance, such as equity participation, guarantees and underwriting. Financial assistance can be provided for the expansion or modernization of existing enterprises in the field of agriculture, fishery, manufacturing, the processing industry, transport and communication, tourism, mining, construction and others. The Bank is keen on working closely with the Ministry of Trade and Commerce and the Fiji Trade and Investment Board to promote workshops and seminars for raising the awareness of entrepreneurs in Fiji regarding how to manage technology transfer. Technology acquisition is a skill that is much more complex in large projects where various parties are involved in the transaction process. The case of Tropik Wood illustrates the importance of good project managers who are well versed in the technology acquisition process and strategies (see Chapter IV).

66. With regard to operating capability, firms in Fiji have developed capability in day-to-day operations. There are shortcomings however with regard to maintenance and quality assurance. A number of firms interviewed reported problems in sourcing spare parts and components to ensure proper maintenance of their equipment. Some firms were operating below their installed capacity. Hence, the move by the Government to promote export markets is important in the sense that it would ensure greater utilization of existing facilities and also encourage firms to upgrade their operating efficiency. There is evidence of adaptive capability among a small number of firms, particularly among entrepreneurs striving to penetrate the export market. However, the lack of expertise and technical infrastructure is one of the major constraints faced by firms engaged in such efforts.

D. Technical infrastructure

1. R and D in the field of agriculture

67. The Research Division, within the Ministry of Primary Industries is considered as the main source of agricultural research in Fiji. It is responsible for research on crops (excepting sugar cane) and some aspects of livestock. Through its service section, and in conjunction with a section of the land/use division based at Koronvia, it assists in research in other areas including forestry. Although the sugar industry carries out its own research, the Division collaborates with industry to work jointly on research affecting the sugar industry. There is very little external input from the agricultural sector on the agenda for research. The division is now reviewing its priorities and may consider participation from other government agencies and private organizations for further contributions to its research agenda. The immediate need is to fill the posts which have become vacant as a result of resignations by researchers. The division has encountered an acute shortage of experienced researchers to undertake its work. The structure of the division is a mixture of disciplines and clusters of subjects. The available staff are spread too thinly for effective work to be undertaken in each discipline. There is a need to collaborate closely with foreign research Institutes in contracting some of the research work. The Ministry of Primary Industries plans to review and revamp the research activities of the Division.

68. Sugar cane research is mainly undertaken by the Sugar Cane Research Centre of the Fiji Sugar Cane Corporation Limited. The Research Centre studies sugar cane breeding, varietal

development, tissue culture, agronomy and plant protection. New varieties have been released for commercial utilization by the farmers. The Technical Aid Team consists of three scientists from Taiwan (Province of China) who had joined the research centre for a three-year term to conduct research in agronomy, water treatment and inter-cropping.

2. The Institute of Natural Resources (INR)

69. The Institute of Natural Resources (INR) was established in 1977 on the campus of the University of South Pacific (USP). USP is a regional institution serving 11 South Pacific island countries. INR was set up to organize short training courses for scientific and technical personnel,thus meeting the specific needs of the South Pacific region. It conducts workshops and seminars associated with the development of the region's natural resources and undertakes consultancy and research. INR focuses attention on eight significant areas: energy, environment, remote-sensing, food science, soil resources, water resources, analytical chemistry, and plant resources. A number of professional staff and consultants work in other sections of the University as the Institute works closely with various departments including chemistry, biology, and physics. The analytical service laboratory is located on the campus and is reputed to be the best-equipped facility of its kind in the South Pacific. It undertakes work relating to analyses of food components, fermentation, microbiology, and pharmaceutical and pesticide residues.

70. INR also has an Energy Studies Unit which is concerned with testing of household appliances, calibration of electronic and mechanical instruments and other activities related to physical and mechanical testing. It specializes in training relating to regional energy management and conservation. The Environmental Studies Section undertakes work on environmental impact assessment, and on training in remote sensing operations and applications. INR is very keen to expand and provide a more comprehensive testing facility to industries. INR could indeed market its services more aggressively. It has voiced the desire to have its laboratories accredited by third party organizations, particularly from New Zealand, for greater credibility. INR has been experiencing some difficulty in recruiting skilled people to expand its activities.

3. Centre for Appropriate Technology and Development (CATD)

71. CATD was established as a result of a joint-venture agreement between the Government of Fiji and the Federal Republic of Germany. The objective was to improve the standard of living in the rural areas through the development of technical skills and services. The main functions of CATD include the provision of both short- and long-term training programmes in the area of technical and social development, besides establishing an advisory service to serve the offices of local communities. CATD recognizes the need to promote and facilitate transfer and diffusion of technologies appropriate to rural areas. The list of projects being implemented include a smokeless stove, solar generation of electricity, water tanks and copra dryers. CATD is also looking into promoting the commercialization of some of the projects undertaken by the participants in its programmes. It is expected that these participants would then go back to the rural areas to undertake their own entrepreneurial activities by utilizing the skills acquired through the training programmes. Since Fiji comprises several islands, such trainees have an important role to play in supporting technical development, particularly repair and maintenance of electrical and mechanical products.

4. Pine Commission's R and D programme

72. The Pine Commission's research programme is oriented towards improving the quality and quantity of plantations which it manages. Due attention is given to environmental factors. Silviculture and mensuration research has focused on analysis of spacing and waste-thinning trials, in addition to a review of permanent sample plots. The results of this work have led to recommendations being made to increase the initial planting densities from 816 stems per hectare to 1,111 and 1,333 stems per hectare. Other work includes fertilizer trials, second rotation growth differences, establishment practices on log landings, alternative species to pine, and pine-seedling quality studies. A team of scientists from the Forest Research Institute of New Zealand has recommended a two-year research programme related to establishing large plantations of *eucalyptus tereticornis* in the dry zones in Western Viti Levu for chiplog production.

73. The Applied Research Unit of the Commission remains instrumental in providing an effective interface between research findings and practical field applications. The 400 hectare "Establishment Excellence" project at Lololo Forest resulted in 92 per cent survival, with significant cost savings. Additional establishment of demonstration areas has been effected in the Nabou and Ra forests. Technical assistance, on a variety of establishment operations, has been provided to the stations.

5. *Standards and quality*

74. Fiji does not have a body to promote standardization and quality assurance. However, a standards and quality assurance legislation is currently under consideration as a means to promote quality assurance and product testing. The Government wishes to promote quality in view of its export-oriented industrialization programme. The Government is also concerned with protecting consumers from inferior products. In view of the lack of facilities in Fiji, industries have been sending their products to New Zealand and Australian testing laboratories for product testing and analysis. The development of private laboratories with testing facilities in the country is being encouraged by the Government. The need to set up a standards organization seems to be a priority for the Fiji Government. However, there has been some debate as to whether there was a need for national standards in view of the small size of the economy. The authorities wish to have an expert view the legislation and propose appropriate mechanisms to promote standards and quality acitivities in Fiji. In this regard, it is worthwhile for the Government to consider promoting the ISO 9000 within its local industry, particularly those who are exporting to foreign countries. A form of certification system must be established to encourage products manufactured in Fiji to be certified to standards specifications as demanded by foreign countries.

75. It would be worthwhile studying the establishment of quality standards and certification mechanism, taking into account resources available in Fiji, and the plan to expand the manufacturing sector. Such studies should look into utilizing existing facilities, for example by upgrading laboratories which are located within universities (e.g. the Institute of Natural Resources). A good data base should be established for product-testing possibly using facilities and equipment already available within Fiji. This would give industry access to such facilities. The approach would also avoid duplication of effort, particularly by optimising equipment which is already available in certain institutions.

E. The need for co-ordination and collaboration on technology transfer, research and development and technical support, in particular to SMEs

1. Co-ordinating aspects

76. A general lack of central co-ordination on technology transfer, research and development and technical support issues has already been mentioned. A framework must be established where issues related to industrial technology development in Fiji, particularly to technology transfer, research and development, and technical support can be articulated. It is advisable that a mechanism be established within the Ministry of Trade and Commerce to discuss and formulate policies related to the management of industrial technology, with the participation of such agencies as the Fiji Trade and Investment Board (FTIB), the Fiji Development Bank (FDB), the Central Bank, the Ministry of Primary Industries, the Ministry of Education and agencies related to manpower development. Issues vital to the enhancement of technology development in Fiji could be discussed in this forum. Policy recommendations could then be forwarded to the Cabinet for consideration and adoption.

77. The lack of co-ordination with respect to the establishment of technical facilities through technical aid programmes has also been pointed out. Some degree of screening should be done to ensure appropriate resource allocation to upgrade technical facilities in Government laboratories. Accreditation to upgrade the capability of existing laboratories should be encouraged. It is important that immediate efforts be undertaken to identify the need for product testing in industry and upgrade laboratories dealing with those areas.

78. With regard to R and D activities, there is also need for a closer linkage between the University of South Pacific and industry. In addition, collaboration should be encouraged with R and D institutions in neighbouring countries, including Australia and New Zealand, through joint research programmes. Taking into consideration the current state of industrial development, it is important to promote new product development in such sectors as wood, food, leather and garments. In this respect, specific mechanisms should be established to promote, through close collaboration between R and D institutions and industries, the development of new enterprises based on new product development as well as the upgrading of products in existing enterprises. Hence a special programme to support small- and medium-sized enterprises in Fiji should be considered.

2. Technical support to SMEs

79. Interviews with selected firms have revealed that domestic firms, particularly in the food and wood-based industries, do undertake some degree of product development. For many of these firms, such activities are crucial to meeting the demands of foreign markets. Firms in Fiji will not be able to penetrate export markets unless they can manufacture competitive products. In this connection, more emphasis should be given to assisting small- and medium-sized manufacturing industries, develop the high-quality products and processes and to introduce them to the market. Authorities may identify specific sectors of industry where assistance could be concentrated. This presupposes better forecasting of future technological needs and the requirements of industry. Industry will need to be involved in the planning of assistance schemes but should not be allowed to use the assistance for other than the prescribed purposes. However, assistance should not be confined only to product development activities, but should embrace the marketing skills essential to efficient commercialization of goods and services. The provision of assistance should include efforts to upgrade quality and introduce new designs.

80. Enterprises have also expressed a desire for assistance in techno-economic and management areas, including market strategies. Packages should be designed covering technical assistance that is tailored to match the needs of industry. As has been pointed out above, the interface between the University of South Pacific and industry through contract or collaborative work is an essential element. Furthermore, the financial assistance scheme promoting innovations is required for broadening the interface between industry, universities and research organizations. However, in establishing financial assistance schemes, their objectives should be clearly stated at the outset. In this connection, the Malaysian quality and productivity scheme shown in the Annex could be a source of inspiration for evolving such a scheme in Fiji. In this kind of scheme, it is imperative that adequate provisions be made for monitoring progress so that the value of assistance given and the continued relevance of the instruments can be assessed. The terms and conditions on which assistance is offered should be flexible enough to be attractive to the various sectors of industry involved, while satisfying broad policy objectives. Of equal importance is the need to ensure that Government procedures for providing assistance be simplified in the interest of speeding up the decision process.

81. As for medium- to longer-term measures, assistance to support innovations of small- and medium-sized enterprises should be more comprehensive. Collaborative efforts should be encouraged such as the establishment of joint facilities for small firms. Support for new product development should include the various elements of the innovation and commercialization process ranging from market feasibility studies, design, prototype, and other necessary resources to bring the product from the conceptual stage to a point where it is ready for final production.

82. In order to promote the innovation process, it is important that each stage be supported by an adequate financing scheme. Financing should aim at: encouraging companies to engage in innovation activities; providing seed capital financing, in order to support the initial phase of the innovation process; encouraging local companies to build up product process design and development capability; and promoting the development of indigenous technological know-how.

83. Measures promoting innovation will not be effective in building up the international competitiveness of Fiji without appropriate quality and product or service standards schemes. Visits to a number of locally-owned garment factories indicate an urgent need to promote good

manufacturing practices to meet certain international quality standards. Modern quality-management means adopting a total approach to quality. A company or organization should arrange every aspect of its activities in a cost-effective way, in order to ensure that a product or service is designed, built and delivered to meet the final customer's needs and expectations. The achievement of product-quality and the exploitation of its full potential in the market must involve, and be properly integrated with, other company functions, such as design and marketing. Recently, a few countries in this region, particularly NICs such as Singapore and Taiwan (Province of China), have launched massive programmes to promote quality awareness. In order to upgrade quality support systems, financial allocation has been made to subsidize consultancy services to companies.

84. It is essential that companies in Fiji demonstrate their commitment to quality and be aware of the benefits to be derived from implementation of quality improvements. By giving priority to quality, industries can show that they are in the process of building up an industrial base with strong quality support. For instance, in recent times, the growth of the garment industry shows how important quality is in developing international competitiveness to meet international quality requirements. The increased earnings that were achieved following adoption of a quality approach have been translated into higher profits. Investments in R and D or in new production methods have also had an impact on competitiveness. Above all, better quality can lead to a higher reputation among existing and potential customers so that the products and services are sought after and easier to trade.

85. A number of foreign firms in Fiji have already adopted the quality approach. It is important that small- and medium-sized companies also see the advantages of this approach. Therefore, programmes to support quality awareness at the national level should be designed and implemented. Government encouragement for the certification schemes, the development of a National Accreditation System and the launching of a quality awareness campaign is crucial. A mechanism should be established whereby relevant up-to-date standards could be developed as a basis for public specifications. Government regulations and, most importantly, standards, should be diffused in both domestic and export markets. It would be advisable to use available standards, as far as possible, in drawing up regulations, i.e. in such areas as consumer safety, health and safety-at-work.

86. Mention should be made of the fact that under pinning much work on specifications and performance standards (and indeed, on higher-quality industries) is the provision of a reliable means of measuring. This may be seen in the work, largely unseen, of the metrology services. The accuracy of their measurements rely on the calibration of measuring equipment which is set against a measurement standard of higher accuracy. There is a need further to upgrade the calibration and measurement services provided by the Ministry of Trade and Commerce.

CHAPTER IV

Case studies

87. Two key sectors may be used to illustrate the transfer and utilization of technology: garment manufacturing and the pine timber industry. The following two brief case studies reveal that conditions under which transfer of technology takes place are of crucial importance for successful utilization of technology. Moreover, these cases also show also that in Fiji there are sectors where greater absorption capacities for advanced technology are present and where Fiji could build up its competitive edge.

A. Garment Manufacturing

88. Garment manufacturing has been selected for special treatment because of its growing contribution to Fiji manufactured exports. In 1990, garment exports amounted to F$114 million, constituting the biggest item. Garment manufacture is a labour-intensive industry involving the use of many small machines. Each needs to be modernized or updated from time to time, in the effort to de-skill the craft aspects of the production process. The primary aim of such investment is to increase the productivity of all employees and thus reduce overheads per unit and produce at competitive costs. Further cost reductions are possible with the elimination of waste and a reduction in operator training time.

89. High technology applied to garment assembly has been acknowledged as one of the principal ways of gaining an advantage in an increasingly competitive world. The clothing industries of the developed world have accepted the need for heavy capital outlay in order to survive. In the Fijian context, increases in productivity of 40 to 45 per cent would be possible in the mid-1990s, if state-of-the-art technology is adopted. This will fall short of meeting the 80 per cent productivity advance required if trade restrictions are to be eliminated. This situation provides Fiji with an outstanding opportunity to gain a lead in garment export markets by introducing automated assembly technology.

90. Services to the customer - the buying authority rather than the ultimate consumer - have become increasingly important. The main needs today are for a quick response to fashion changes and consumer demands, reliable delivery and quick repeats to support competitive prices. This means shortening lead times for the preparation of samples and delivery of finished goods. By creating modern clothing production units, these goals can be achieved. Applying such technologies as computer-aided design (CAD), computer-aided manufacturing (CAM), streamlined cutting room operations and materials handling systems to clothing production is seen as vital.

91. As garment manufacturers contemplate upgrading their technologies, it would be useful to look at the garment assembly technologies available in the market. The computer-based technologies listed below are all commercially available and are considered as essential tools for large to medium-sized garment manufacturers.

92. ***Computer-aided lay planning*** - this enables the operator to plan on a graphics visual display unit the most economical layout of pattern parts using a minimum of fabric. Low cost systems, suitable for companies employing 100 to 200 operators, are now available at low prices.

93. ***Cloth cutting*** - this feature is a natural extension of the first, involving storage of the lay plan on magnetic tape which is subsequently used to control the movement of the cutting knife. Laser cutters particularly adept at cutting natural fibres are becoming increasingly popular. They allow significant increases in productivity and fabric savings of up to 5 per cent. For the time being, plasma and water jet cutters for single plies remain at the prototype stage.

94. ***Computer-controlled cloth-spreading*** - this operation which has to be carried out in advance of cutting is now within the reach of many companies. The most sophisticated spreaders can be left on their own to work the programmed route. This could involve laying the fabric plies to the exact lengths required, often involving complex step lays where the equipment will change the roll of cloth automatically. At the present time human input is still required.

95. ***Suspended conveyor systems*** - these aim to reduce the time spent by the operator in sorting and aligning fabric parts. Clamps and hangers suspended from an overhead rail hold the parts which are mechanically delivered to the work station. Bar-coding of the hangers allows the location of each garment to be known and delivered to each operator in an optional programmed sequence determined by work studies. Real time production control systems can then be linked to individual work stations to provide:

- Reduction of work in progress,
- Improved quality control,
- Improvements in productivity of 30 to 35 per cent,
- Elimination of operator's work tickets and written lists.

96. ***Sewing technology*** - for long runs of standard styles or for basic operations which are needed for many products (e.g. pockets, collars, etc.). A large number of automatic machines are available for precision stitching. Electronically controlled, these machines can be easily programmed for a variety of stitching operations. More complex than automatic machines are the engineered work stations which generally include some degree of automatic feeding of garment parts, often for several sections of a difficult operation, e.g. shirt cuff attachment and button-holing.

97. The heavy reliance of the Fijian textile industry on exports of finished garments demands the introduction of computer-based technologies, that offer improved quality coupled with greater production efficiency. Several of the larger garment manufacturing groups have demonstrated that this can be achieved by an appropriate investment in advanced equipment. However, only two of the techniques described in the cluster of technologies have so far been recognized: computer-aided-lay-planning and engineered-work-stations. Clearly, there are significant opportunities to exploit available equipment to bring the industry up to equivalent standards in use in the developed world. For example, Mark Apparel has installed such equipment.

98. A major weakness in Fiji's trade strategy is the mistaken belief that the capital costs involved in upgrading industry are beyond the reach of most enterprises. This is simply not the case: smaller CAD systems for lay-planning now retail at around $US60,000. Eight years ago the lowest price for a system was $US250,000. Moreover, today's most comprehensive systems, averaging $US120,000, are more powerful and supplied with more programmes than the $US250,000 installations of the previous decade. Modern systems are usually modular so that a small company can expand its CAD system as the enterprise grows. In ship-building, for example the Fiji Marine Shipyard is beginning to recognize the benefits of computers.

99. The garment manufacturing sub-sector would do well to observe the actions of its competitors in other low labour cost countries where garment manufacturers feel obliged to invest hard-earned foreign currency in automated machines and CAD technology. South Korea has recently sent a group of specialists around Europe to study high technology in clothing manufacturing. Now that the giant Samsung Electronics Group owns a clothing factory, electronics are certain to play a large part wherever applicable. China is buying suspended work handling stations from Eton of Sweden. Gerber of the United Stats has sold to China four of its high ply, computer controlled cutters.

B. Pine timber processing

100. The country's only major processor of pine timber is Tropik Wood Industries Limited which owns and operates Fiji's largest sawmill. The Company is owned by Fiji Pine Commission (51 per cent), BP South-West Pacific (29 per cent), Commonwealth Development Corpo-

ration (10 per cent) and European Investment Bank (10 per cent). Its assets are valued at around F$45 million. The processing plant at Drasa, 13 km from Lautoka, includes a weigh bridge, log yard, sawmill, chipmill, kilns, treatment plant, moulding shop, workshop and dispatch facilities. The plant generates all its electricity requirements from wood residues. Tropik also owns and operates facilities for storage and export of woodchips at the port of Lautoka and for the preparation and treatment of pine posts and poles at Seaqaqa on Vanua Levu. In carrying out its activities Tropik contributes to objectives which may be summarized as follows:

(a) Utilization of the substantial plantation pine forests planted by Fiji Pine Commission and Fiji Forestry Department as these forests become economically feasible to harvest.

(b) Provision of a reliable renewable source of sawntimber to meet the needs of the Fiji domestic market, thereby enabling the conservation of Fiji's indigenous timber species.

(c) Generation of foreign exchange earnings from the export of sawntimber and woodchips.

(d) Generation of a worthwhile return to the investors in the project.

Table 4

LOG SUPPLY
(tonne/year)

	FIJI PINE COMMISSION	FORESTRY DEPARTMENT	PRIVATE WOODLOTS	TOTAL
Sawlogs	74,000	28,000	700	102,700
Pulplogs	171,000	9,000	1,300	181,300
Posts	-	2,500	-	2,500
Poles	-	2,500	-	2,500
TOTAL	245,000	42,000	2,000	289,000

Fiji Pine Commission and private woodlot supplies are all drawn from forests on Viti Levu; the logs from the Forestry Department are transported from the Seaqaqa forest estate on Vanua Levu. Most of the log supply is of *Pinus Caribaea* with a small proportion of *Pinus elliottii*.

Table 5

PRODUCTION/SALES

		VOLUME (tonne/yr)	VALUE (F$m/yr)
Woodchips			
For export to Japan		180,000	13.5
	m3/yr		
Sawntimber			
For sale in Fiji		8,000	2.3
For export to:	Australia	24,000	8.3
	Pacific Islands		
	New Zealand		
	Taiwan (Province of China)		
	Japan		
		m3/yr	
Posts/Poles			
For sale in Fiji		4,500	0.8
			24.9

101. The success of Tropik Wood illustrates the importance of technology transfer and good management. The company first of all attached great importance to skill formation related to technology acquisition and financing. It was able to attract foreign funds and expertise. Capable management ensured the success of the project. The project encountered serious technical problems during the operating phase, however. By acquiring technology and know-how at the right time and in a way best suited to it, it was able to surmount the technical problems. In addition, the management capability built into the project kept alive the interest of foreign investors. The strategy adopted by the management took into account the relationships existing between investment, technology acquisition, marketing and skill-formation (see tables 4 and 5).

102. Tropik Wood has established a good reputation as a supplier of high-quality woodchips to Japan. Long-term contracts have been signed under which major Japanese pulp and paper companies will purchase Tropik's total chip production for the next five years. With an increasing demand for Tropik chips, there is a very sound future for pine woodchip exports from Fiji. A wide range of high-quality sawn-timber has been very successfully marketed in Fiji and in Australia, New Zealand and other Pacific Islands. The grades manufactured include house framing, material treated for outdoor use, boards, profiles, fence pailings and lath material. Emphasis in future will be on increasing the proportion sold domestically, thus capitalizing on the quality image established in the export market.

CHAPTER V

SUGGESTIONS AND RECOMMENDATIONS

103. Like many other developing countries, Fiji has had to encourage the inflow of foreign technology, capital and management so as to develop its manufacturing sector. In addition to joint venture arrangements, some of local companies have acquired technology through purchase of machinery, including assistance for specific consultancy services. Many of these firms had attempted to seek on their own the necessary information and know-how. They developed very strong technical exchange networks and forged informal links with independent machine manufacturers, overseas research organizations and raw materials suppliers.

104. Fiji, to a great extent, has shown a generous attitude towards foreign investment and is striving to attract foreign technology by pursuing a policy that favours open transfer of technology with minimum intervention from Government.

105. The manufacturing sector is currently undergoing major restructuring, with a focus on deregulation and export-orientation. The move by the Fijian Government to liberalize the manufacturing sector will increase pressure on industry to compete and improve its efficiency, technology and quality. The shift will be difficult for firms which have enjoyed many years of protection. Government support in creating an environment conducive to technological excellence is crucial in preparing companies to compete in the changing environment. Technological capability will have to be enhanced to meet the demand of new export markets. Strategies must be formulated that would increase some degree of discipline among the industries where quality, efficiency and technology will become the cornerstone of manufacturing activities.

106. A framework must be established to articulate issues relating to science and technology and to transfer and development of technology. It is imperative that the Ministry of Trade and Commerce take the lead role in formulating policies relating to the management of industrial technologies. There is a need for central co-ordination in the establishment of technical facilities to maximize existing resources.

107. A form of quality certification system must be established in order to upgrade quality in the manufacturing industry. Greater efforts should be made to create an awareness of the importance of quality among existing manufacturers. Likewise, there is a need to strengthen existing facilities for product testing. To support the role of small- and medium-scale industries, programmes need to be formulated to promote product development and quality upgrading. Such support is essential in view of the interests of enterprises in Fiji to compete in the export market.

108. Given the current policy of the Government regarding support for an export orientation, the development of an appropriate information system conveying technical regulations and market intelligence is essential. Most of the firms interviewed have recognized a need to upgrade their technology to compete in the export market. Companies in Fiji which have been established for the purpose of import substitution have acquired technology from independent machine suppliers and have developed close links with foreign consultants. As the Government expands its manufacturing base, firms will have to deal with different technology transactions which will require specialized skills for negotiation, evaluation and assessment. Hence there is a need to establish a mechanism that would promote and strengthen the companies' abilities to manage the transfer of technology.

109. Given the lead times before results can be counted in developing human resource, it is essential to imbue manpower development programmes with a sense of urgency. With regard to the Skills Development Fund, it is imperative that the fund be used to fulfill clearly industries' requirements; the management of the fund should involve greater private sector participation. The growing role of export-oriented industries, particularly in the Tax Free Zone, will increase pressure on Fiji to supply adequate skilled manpower.

110. With regard to the impact of new technologies, foreign companies are beginning to exploit and apply these technologies in their operations. Efforts must be taken to ensure that domestic firms also benefit from the diffusion of such technologies. Training centres should be upgraded as appropriate in order to enhance the skills of existing workers and expose them to new technologies. At the same time, firms in Fiji should be encouraged to adopt new technologies wherever appropriate. Of no less importance is the need to create a technology culture among local industries. It should be one that is forward-looking, supportive and conducive to the development of leadership in technology development. The move by the Fijian Government to liberalize the manufacturing sector will increase pressure on industry to compete and improve its efficiency. It would be a good idea if the industrial policy were outlined in greater detail so as to enable companies make their investment decisions quickly.

111. Because of the changing global environment, it would be in the interest of the economy of Fiji to formulate strategies that would foster concerns for quality, advanced technology and design considerations in industry, as these could become the cornerstone of its manufacturing strategy.

112. For better utilization of R and D results, it is important to encourage input from the agriculture sector on the agenda of research carried out by the public R and D system. Furthermore, a suitable collaboration mechanism between R and D institutions, university and enterprises should be elaborated. This will enable industries to undertake activities in product development and quality improvement.

113. A good data base must be established with regard to product testing facilities and equipment available within Fiji. This would allow industries to have access to those facilities. It would also avoid duplication of efforts, particularly with regard to acquisition of equipment which is already available in certain institutions.

114. Small firms should be encouraged to seek for more techno-economic and management consultancies. Conversely, there is a need to the develop better advisory and extension services, including those dealing with product market strategies. Attention should be directed at desigining packages of assistance, including technical assistance tailored to match the needs and requirement of small- and medium-sized enterprises.

115. With the growing emphasis on encouraging indigenous Fijians to engage in the industries, it is important that support programmes be initiated in the field of technology acquisition. The Fijian Development Bank is keen to work closely with the Ministry of Trade and Commerce and the Fiji Trade and Investment Board to promote workshops and seminars that will create awareness among entrepreneurs in Fiji concerning technology transfer and management.

116. There is also an urgent need to develop an entrepreneurial development programme to promote participation of indigenous Fijians in business and industry. The FNTC will have to be supported through special fund allocations to promote entrepreneurship programmes in close collaboration with regional organizations such as Technonet Asia in the areas of technology information.

117. The formulation of a comprehensive policy framework for technology transfer and development should help Fiji to consolidate current industrial development efforts. Such a policy framework is essential in view of the Government's critical role in providing leadership and vision as well as in nurturing those areas which because of their nature, cannot attract the attention of private enterprises.

118. It is the limitation related to skills development and geographical remoteness that constitutes the greatest obstacle to economic growth in Fiji. Often manufacturing and other facilities cannot achieve viable economies of scale. A number of firms in Fiji are operating below their installed capacity because of the limited domestic market. Hence, an important strategy is to expand the market through exports so as to reach the scale needed. To increase exports, greater specialization may be necessary. Likewise more efficient use may have to be made of comparative advantage. The growth in the garment industry is a good example of future development in the manufacturing industry. In this regard, technology development is essential for upgrading efficiency and helping to increase the comparative advantage. As the economy of the country opens up, it will have to enhance its exports to provide foreign exchange for the purchase of imports. However, there are constraints, particularly production inputs such as

steel, electronic components, machines and spare parts which have to be imported and the cost and availability of these items pose serious problems to existing industries. It is assumed that the deregulation of the Fijian economy will benefit the consumer in terms of lower prices. This will come about only if the industry displaced by imports can be put to use in other productive capacities. Where this does not happen, market failure will occur and some form of adjustment would be necessary.

119. UNCTAD would have a significant role in assisting Fiji in the field of technology transfer. The Advisory Service on Transfer of Technology would be ready to assist and co-operate, within the competence of UNCTAD, in implementing some of these suggestions and recommendations. Within this project, as a follow-up to this report and in close consultation with the national authorities and UNDP, a country seminar could be organized. The programme would concentrate on possibilities to promote and improve technology imports and domestic technology capacity-building, in line with the objectives of project RAS/86/168, financed by UNDP.

ANNEX

1. QUALITY AND PRODUCTIVITY IMPROVEMENT SCHEME: [a]

Introduction

1. The Quality and Productivity Improvement Scheme provides grants to assist small- and medium-scale industries (SMI) towards improving and upgrading their quality system through the Certification Marking Scheme, Good Manufacturing Practice (GMP) and other quality certification schemes recognized by the Government.

Form of assistance

2. Assistance is given in the form of a matching grant where 50 per cent of the project costs is borne by the Government and the remaining 50 per cent is to be borne by the applicant company, subject to a maximum of $100,000.

Eligible expenses

3. Expenses eligible to be claimed are:

- Fees to quality consultant;
- Cost of training managers, technical and other approved personnel;
- Testing fees;
- Registration fees for product certification; and
- Costs of purchasing additional quality development tools.

Mode of disbursement

4. The grant is disbursed in three stages, on a reimbursement basis. The first disbursement of 20 per cent is to be made after the appointment of the project consultant. The second payment of 30 per cent is to be made upon submission of the consultant's report. The balance of the grant will be paid upon obtaining certification and submission of the final project report. All claims for payment must be accompanied by supporting documents verified by an external auditor.

Conditions For Approval

5. Companies applying for the grant must satisfy the following conditions:

- Have applied to participate in the relevant certification scheme;

---

[a] This proposed scheme is based on the Malaysian Quality and Product Development Scheme.

- Have been in production and the product sold in the market;
- Possess the necessary technical and management knowledge in the relevant field;
- Be capable of financing at least 50 per cent of the cost of the project/study;
- Possess a production facility or have access to other facilities approved by the Government; and
- Have a good business record with financial institutions and government agencies.

2. *PRODUCT DEVELOPMENT AND DESIGN SCHEME*

Introduction

6. The Product Development and Design Scheme provides grants to small and medium-sized industries (SMI). The purposes is to improve local product design and development, to build up indigenous technological know-how for the development of new products or processes, and to improve existing products or processes.

Form of assistance

7. Assistance is given in the form of a matching grant where 50 per cent of the project costs is borne by the Government with the remaining 50 per cent to be borne by the applicant company, subject to a maximum of $US100,000.

Eligible expenses

8. Expenses eligible to be claimed are:

- Salary of technical manpower directly involved in the project;
- Cost of purchasing additional design and development tools;
- Costs of materials used in constructing prototypes;
- Consultancy fees;
- Costs of acquiring technology/licence/patent/copyright/prototype; and
- Costs of packaging and documentation.

Mode of disbursement

9. The grant will be disbursed in two stages on a reimbursement basis. The first disbursement will be up to 50 per cent of the cost incurred or up to 50 per cent of the grant approved, whichever is lower. The balance of the grant will be disbursed upon completion of the project and after submission of all claims and a project report. All claims for payment must be accompanied by supporting documents verified by an external auditor.

Conditions for approval

10. Companies applying for the grant must satisfy the following conditions:

- The proposed product must be of a high technical standard and conform to sound design practice;
- The development team undertaking the project must possess in-depth knowledge of the technical and commercial aspects of the product and/or process;
- The development work must be carried out by local engineers or designers. However, where appropriate, foreign experts or consultants may be engaged to lead or supervise the project;
- The project and/or process must be a marketable item and not a one-off project tailored to a particular customer;
- Should a company decide to conduct a technical and/or marketing feasibility study to establish the viability of a proposed product/process, 50 per cent of the related expenses can also be supported subject to a maximum grant of $US5,000;
- A separate application is required for a feasibility study. Upon completion of the study, the applicant company can then apply for a grant to carry out the development phase of the project, provided that the outcome of the feasibility study is positive;
- A company may apply for the two phases simultaneously but the approval for the second (development) phase is conditional upon the positive outcome of the first (feasibility study) phase;
- In cases where a feasibility study is not necessary, a company can proceed to apply for support of the development phase;
- The company must possess the technical and management knowledge in the relevant field;
- The company must be capable of supporting at least 50 per cent of the cost of the project/study;
- The company must possess a production facility or have access to other facilities approved by the Government; and
- The company must have a good business record with financial institutions and Government agencies.

REFERENCES

- FIJI Round Table Meeting on Development Assistance Requirement Geneva, May 1990.

- Central Planning Office, 1985- Fiji's Ninth Development Plan, 1986 - 1990, Suva, November 1985.

- Handbook, Fiji Institute of Technology, 1989.

- An Investor's Guide to Fiji, Fiji Trade and Investment Board, Suva, 1989.

- Labour Market Skills/Assessment Survey, National Center for Development Studies.

- Vijendra Singh, Country Report for the Seminar on Trade Promotion, Fiji 1990.

- Review of Performance and Prospects of the Fiji Economy, National Economic Summit, Suva, 1991.

- Supplement to the 1992 Budget Address, Ministry of Finance and Economic Planning, Suva, 1991.

كيفية الحصول على منشورات الامم المتحدة

يمكن الحصول على منشورات الامم المتحدة من المكتبات ودور التوزيع في جميع انحاء العالم . استعلم عنها من المكتبة التي تتعامل معها أو اكتب الى : الامم المتحدة ،قسم البيع في نيويورك او في جنيف .

如何购取联合国出版物

联合国出版物在全世界各地的书店和经售处均有发售。请向书店询问或写信到纽约或日内瓦的联合国销售组。

HOW TO OBTAIN UNITED NATIONS PUBLICATIONS

United Nations publications may be obtained from bookstores and distributors throughout the world. Consult your bookstore or write to: United Nations, Sales Section, New York or Geneva.

COMMENT SE PROCURER LES PUBLICATIONS DES NATIONS UNIES

Les publications des Nations Unies sont en vente dans les librairies et les agences dépositaires du monde entier. Informez-vous auprès de votre libraire ou adressez-vous à : Nations Unies, Section des ventes, New York ou Genève.

КАК ПОЛУЧИТЬ ИЗДАНИЯ ОРГАНИЗАЦИИ ОБЪЕДИНЕННЫХ НАЦИЙ

Издания Организации Объединенных Наций можно купить в книжных магазинах и агентствах во всех районах мира. Наводите справки об изданиях в вашем книжном магазине или пишите по адресу: Организация Объединенных Наций, Секция по продаже изданий, Нью-Йорк или Женева.

COMO CONSEGUIR PUBLICACIONES DE LAS NACIONES UNIDAS

Las publicaciones de las Naciones Unidas están en venta en librerías y casas distribuidoras en todas partes del mundo. Consulte a su librero o diríjase a: Naciones Unidas, Sección de Ventas, Nueva York o Ginebra.

Printed at United Nations, Geneva
GE.91-55909
January 1992–3,110

United Nations publication